

4-4-00

PATENT

Docket No. 1232-4623

Express Mail Label No. E1604719978US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UTILITY APPLICATION AND APPLICATION FEE TRANSMITTAL (1.53(b))

ASSISTANT COMMISSIONER FOR PATENTS

Box Patent Application
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of

Named Inventor(s) and

Address(es):

Yuji KOIDE, 14-42-203, Hiyoshi 5-chome, Kohoku-ku, Yokohama-shi, Kanagawa-ken,
Japan

For:

IMAGE-SENSING METHOD AND APPARATUS, CONTROL METHOD AND
APPARATUS THEREFOR, AND STORAGE MEDIUM

Enclosed are:

☒ 22 page(s) of specification, 1 page(s) of Abstract, 6 Page(s) of claims

☒ 4 sheets of drawing ☒ formal ☐ informal

☒ 6 Page(s) of Declaration and Power of Attorney

☐ Unsigned

☒ Newly Executed

☐ Copy from prior application

☐ Deletion of inventors including Signed Statement under 37 C.F.R. § 1.63(d)(2)

☒ Incorporation by Reference: The entire disclosure of the priority application(s) identified below, is considered as being part of the disclosure of the accompanying application and is incorporated herein by reference.

☐ Microfiche Computer Program (Appendix)

☐ _____ page(s) of Sequence Listing

☐ computer readable disk containing Sequence Listing

☐ Statement under 37 C.F.R. § 1.821(f) that computer and paper copies of the Sequence Listing are the same

☒ Claim for Priority Japanese Application No 11-122980 filed 4/28/99

- ☐ Certified copy of Priority Document(s)
- ☐ English translation documents
- ☐ Information Disclosure Statement
- ☐ Copy of 1 Cited references w/ English Abstracts
- ☐ Copy of PTO-1449 filed in parent application serial No. _____.
- ☐ Preliminary Amendment
- ☒ Return receipt postcard (MPEP 503)
- ☒ Assignment Papers (assignment cover sheet and assignment documents)
- ☒ A check in the amount of \$40.00 for recording the Assignment.
- ☐ Assignment papers filed in parent application Serial No. _____.
- ☐ Certification of chain of title pursuant to 37 C.F.R. § 3.73(b).
- ☐ This is a ☐ continuation ☐ divisional ☐ continuation-in-part (C-I-P) of prior application serial no. _____.
- ☐ Cancel in this application original claims _____ of the parent application before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
- ☐ A preliminary Amendment is enclosed. (Claims added by this Amendment have been properly numbered consecutively beginning with the number following the highest numbered original claim in the prior application.
- ☐ The status of the parent application is as follows:
- ☐ A Petition For Extension of Time and a Fee therefor has been or is being filed in the parent application to extend the term for action in the parent application until _____.
- ☐ A copy of the Petition for Extension of Time in the co-pending parent application is attached.
- ☐ No Petition For Extension of Time and Fee therefor are necessary in the co-pending parent application.
- ☐ Please abandon the parent application at a time while the parent application is pending or at a time when the petition for extension of time in that application is granted and while this application is pending has been granted a filing date, so as to make this application co-pending.
- ☐ Transfer the drawing(s) from the patent application to this application.
- ☐ Amend the specification by inserting before the first line the sentence:
This is a ☐ continuation ☐ divisional ☐ continuation-in-part of co-pending application Serial No. _____ filed _____.

I. CALCULATION OF APPLICATION FEE (For Other Than A Small Entity)

					Basic Fee
	Number Filed		Number Extra	Rate	\$ 690.00
Total Claims	12	-20=	0	x\$18.00	\$ 0
Independent Claims	5	- 3=	2	x78.00	\$ 156.00
Multiple Dependent Claims	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no				Additional Fee = Add'l Fee = NONE \$ 0

Total: \$846.00

- ☐ A statement claiming small entity status is attached or has been filed in the above-identified parent application and its benefit under 37 C.F.R. § 1.28(a) is hereby claimed. Reduced fees under 37 C.F.R. § 1.9(F) (50% of total) paid herewith \$ _____.
- ☒ A check in the amount of \$846.00 for payment of the application filing fees is attached.
- ☐ Charge Fee(s) to Deposit Account No. 13-4500. Order No. _____. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.
- ☒ The Assistant Commissioner is hereby authorized to charge any additional fees which may be required for filing this application, or credit any overpayment to Deposit Account No. 13-4500, Order No. 1232-4623. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

By: Michael M. Murray
Registration No 32537Dated: April 3, 2000

CORRESPONDENCE ADDRESS
 MORGAN & FINNEGAN, L.L.P.
 345 Park Avenue
 New York, New York 10154
 (212) 758-4800
 (212) 751-6849 Facsimile

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Yoji Koide
Serial No. : TBA Group Art Unit: TBA
Filed : April 3, 2000 (Herewith) Examiner: TBA
For : IMAGE-SENSING METHOD AND APPARATUS, CONTROL METHOD AND
APPARATUS THEREFOR, AND STORAGE MEDIUM

EXPRESS MAIL CERTIFICATE

Express Mail Label No. EJ604719978US

Date of Deposit April 3, 2000

I hereby certify that the following attached paper(s) and/or fee
Application Fee Transmittal (in duplicate); 22 pp. of specs., 1 page of abstract, 6 pp. claims (12 TOTAL
claims); 4 Sheets of Formal Drawings (Figs. 1-4); check in the amount of \$846.00; 6 pg. Executed
Declaration/POA; Assignment Recordation Form Cover Sheet w/ 1 pg. Executed Assignment; Check in the
amount of \$40.00; and return receipt postcard

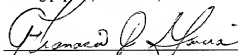
is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37

C.F.R. §1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Box New

Applications, Washington, D.C. 20231.

Francisco J. Garcia

Typed or printed name of person
mailing paper(s) and/or fee)



(Signature of person mailing
paper(s) and/or fee)

CORRESPONDENCE ADDRESS:
MORGAN & FINNEGAN, L.L.P.
345 Park Avenue
New York, New York 10154
(212) 758-4800
(212) 751-6849 Facsimile

SPECIFICATION

TITLE OF THE INVENTION

5 IMAGE-SENSING METHOD AND APPARATUS,
 CONTROL METHOD AND APPARATUS THEREFOR, AND STORAGE
 MEDIUM

FIELD OF THE INVENTION

10 The present invention relates to an image sensing
 apparatus, that can be connected to an information
 processing apparatus via a data transmission/reception
 unit based on the USB (Universal Serial Bus)
 specification, and that has a function to release a
15 suspended status of the information processing apparatus
 by transmitting a resume signal, a control method for
 the apparatus, and a storage medium.

BACKGROUND OF THE INVENTION

20 In an image sensing apparatus such as a digital
 camera, an image signal obtained by an image sensing
 device such as a CCD is converted into a digital image
 signal by an A/D converter and a signal processing unit.
 Then compression using the JPEG (Joint Photographic
25 Expert Group) method or the like is performed on the
 digital image signal by a compression unit. The

compressed data is stored as an image file into a recording unit such as a memory card.

In some cases, the image sensing apparatus is connected to a computer via a transmission/reception unit such as a USB unit, and the image file stored in the memory card is transmitted from the image sensing apparatus to the computer. However, when the computer enters a suspended status as a low electric consumption mode, the data transmission/reception unit of the computer is not operative, therefore the image file cannot be transmitted from the image sensing apparatus to the computer. Once the computer has entered the suspended status, to transmit the image file again from the image sensing apparatus to the computer, it is conventionally necessary to bring the transmission/reception unit such as a USB unit into operative status to release the suspended status, by e.g. depressing a particular switch of the computer.

However, in the above-described image sensing apparatus, to restore the computer from the suspended status as a low electric consumption mode and bring the transmission/reception unit such as a USB unit into the operative status, a user, who is even operating the image sensing apparatus, must move the hands off the apparatus and operate the computer. This is troublesome, and further, the user might miss a shutter chance while

he/she operates the computer.

SUMMARY OF THE INVENTION

5 Accordingly, the present invention has been made
in consideration of the above problem, and has its
object to provide an image sensing apparatus which
improves operability in transmission of image data to a
computer or the like, a control method for the apparatus,
10 and a storage medium.

To solve the above-described problem and attain
the object, an image sensing apparatus according to the
present invention has the following construction.

That is, provided is an image sensing apparatus
15 comprising: image sensing means for image-sensing an
object and outputting an image signal; signal processing
means for converting the image signal outputted from the
image sensing means into digital image data;
transmission/reception means for transmitting/receiving
20 data with an information processing apparatus connected
to the image sensing apparatus via a cable or wireless
communication; and signal generation means for
generating a trigger signal to perform image-sensing
related operation, wherein if the image sensing
25 apparatus and the information processing apparatus are
connected to each other and the information processing

apparatus is in a suspended status, the image sensing apparatus transmits a resume signal via the transmission/reception means to the information processing apparatus, in accordance with the trigger
5 signal.

Further, an image sensing apparatus control method according to the present invention has the following construction.

That is, provided is a control method for an image
10 sensing apparatus comprising: image sensing means for image-sensing an object and outputting an image signal; signal processing means for converting the image signal outputted from the image sensing means into digital image data; transmission/reception means for
15 transmitting/receiving data with an information processing apparatus connected to the image sensing apparatus via a cable or wireless communication; and signal generation means for generating a trigger signal to perform image-sensing related operation, the method
20 comprising a step of, if the image sensing apparatus and the information processing apparatus are connected to each other and the information processing apparatus is in a suspended status, transmitting a resume signal from the image sensing apparatus via the
25 transmission/reception means to the information processing apparatus, in accordance with the trigger

signal.

Further, a storage medium according to the present invention has the following construction.

That is, provided is a storage medium containing a
5 control program for controlling an image sensing
apparatus comprising: image sensing means for image-
sensing an object and outputting an image signal; signal
processing means for converting the image signal
outputted from the image sensing means into digital
10 image data; transmission/reception means for
transmitting/receiving data with an information
processing apparatus connected to the image sensing
apparatus via a cable or wireless communication; and
signal generation means for generating a trigger signal
15 to perform image-sensing related operation, the control
program having code for, if the image sensing apparatus
and the information processing apparatus are connected
to each other and the information processing apparatus
is in a suspended status, transmitting a resume signal
20 from the image sensing apparatus via the
transmission/reception means to the information
processing apparatus, in accordance with the trigger
signal.

Further, an image-sensing method according to the
25 present invention has the following construction.

That is, provided is an image-sensing method in an

image sensing apparatus comprising: image sensing means
for image-sensing an object and outputting an image
signal; signal processing means for converting the image
signal outputted from the image sensing means into
5 digital image data; transmission/reception means for
transmitting/receiving data with an information
processing apparatus connected via a cable or wireless
communication; and signal generation means for
generating a trigger signal to perform image-sensing
10 related operation, the method comprising a step of, if
the image sensing apparatus and the information
processing apparatus are connected to each other and the
information processing apparatus is in a suspended
status, transmitting a resume signal from the image
15 sensing apparatus via the transmission/reception means
to the information processing apparatus, in accordance
with the trigger signal.

Further, a control apparatus according to the
present invention has the following construction.

20 That is, provided is a control apparatus for
controlling an image sensing apparatus comprising: image
sensing means for image-sensing an object and outputting
an image signal; signal processing means for converting
the image signal outputted from the image sensing means
25 into digital image data; transmission/reception means
for transmitting/receiving data with an information

processing apparatus connected via a cable or wireless communication; and signal generation means for generating a trigger signal to perform image-sensing related operation, wherein if the image sensing apparatus and the information processing apparatus are connected to each other and the information processing apparatus is in a suspended status, the control apparatus controls the image sensing apparatus to transmit a resume signal via the transmission/reception means to the information processing apparatus, in accordance with the trigger signal.

Other objects and advantages besides those discussed above shall be apparent to those skilled in the art from the description of a preferred embodiment of the invention which follows. In the description, reference is made to accompanying drawings, which form a part thereof, and which illustrate an example of the invention. Such example, however, is not exhaustive of the various embodiments of the invention, and therefore reference is made to the claims which follow the description for determining the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of the specification,

illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

Fig. 1 is a block diagram showing a schematic
5 construction of an image sensing apparatus according to a first embodiment of the present invention;

Fig. 2 is a flowchart showing image sensing operation and image file transmission to a computer by the image sensing apparatus according to the first
10 embodiment;

Fig. 3 is a flowchart showing the image sensing operation and the image file transmission to the computer by the image sensing apparatus according to a second embodiment; and

Fig. 4 is a flowchart showing the image sensing operation and the image file transmission to the computer by the image sensing apparatus according to a third embodiment.

20 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Preferred embodiments of the present invention will now be described in detail in accordance with the accompanying drawings.

25 (First Embodiment)

Fig. 1 is a block diagram showing the construction

of the image sensing apparatus according to a first embodiment of the present invention.

As shown in Fig. 1, an image sensing apparatus 12 of the present embodiment photoelectric-converts an object image formed via an optical system 1 into an electric signal by an image sensing device 2 such as a CCD, and further converts the signal into a digital image signal by an A/D converter 3 and a signal processing unit 4. The digital image signal is inputted into a memory 5. The digital image signal inputted in the memory 5 is subjected to compression processing using the JPEG method or the like by a compression unit 8, and is stored as a file into the memory 5. The image sensing apparatus 12 of the present embodiment has a control unit 6 and a CPU 7 to control the above-described respective units, a release switch 10 connected to the control unit 6, and a display unit 11. Further, the image sensing apparatus 12 of the present embodiment has a USB I/F circuit 9.

Note that the optical system 1, comprising a lens, an aperture, an optical filter, a shutter and the like, forms an object image on the image sensing device.

Further, the image sensing device 2 is a CCD or the like which converts the object image formed by the optical system 1 into an electric signal.

The A/D converter 3 converts continuous electric

signals outputted from the image sensing device 2 into digital signals.

The signal processing unit 4 generates a digital image signal by performing signal processing on the digitized signal.

The memory 5 is used for temporarily storing the digital image signal outputted from the signal processing unit 4 or storing a file-format digital image signal. The memory 5 comprises an internal memory or an external memory card such as a compact flash memory.

Further, the control unit 6 and the CPU 7 control the overall image sensing apparatus 12.

The compression unit 8 performs compression processing by the JPEG method or the like on the digital image signal outputted from the signal processing unit 4 and temporarily stored in the memory 5.

The USB I/F circuit 9 transmits/receives a digital image signal, transmits/receives control commands, and performs transmission/reception to notify statuses of the computer and the image sensing apparatus, with the computer 13 by a data transmission/reception method based on the USB specification.

According to the USB specification, when the computer enters the suspended status as a low electric consumption mode, any data cannot be transmitted/received between the computer and a device

connected to the computer via a USB
transmission/reception unit. In the USB, data
transmission/reception is performed upon reception of
command from the computer, therefore, if the computer is
5 in the suspended status, any data cannot be transmitted
from the device side to the computer. Once the computer
has entered the suspended status, to transmit/receive
data again in the USB, it is necessary to operate the
computer to release the suspended status or transmit a
10 resume signal from the device side to the computer by
using a remote wake-up function defined in the USB
specification, to release the suspended status of the
computer.

In the image sensing apparatus 12 of the present
15 embodiment, the USB I/F circuit 9 transmits a resume
signal under the control of the control unit 6 and the
CPU 7.

The release switch 10, having at least two
contacts, enters any one of two-stepped statuses in
20 accordance with e.g. the amount of depression of the
switch. In this embodiment, if the release switch 10 is
depressed in part way, a first contact represented as
SW1 is selected, and if the release switch 10 is fully
depressed, a second contact represented as SW2 is
25 selected. When the first contact is selected, image-
sensing preparation operation such as AF or AE is

performed, while when the second contact is selected, image-sensing operation, and digital image-data formation and recording are performed.

Further, in the image sensing apparatus 12 of the present embodiment, as described later, when the first contact of the release switch 10 is selected, the USB I/F circuit 9 transmits a resume signal.

The display unit 11 displays various statuses of the image sensing apparatus under the control of the control unit 6 and the CPU 7, or sequentially displays stored image files in accordance with the user's instruction. The display unit 11 comprises an LCD, a TFT liquid-crystal display or the like.

Next, the operation of the image sensing apparatus having the above construction will be described in a case where the image sensing apparatus, connected with the computer via the USB transmission/reception unit, sequentially forms digital images, stores the images into the memory, and at the same time, transfers the image files in the memory to the computer.

Fig. 2 is a flowchart showing the operation according to the present embodiment.

First, the image sensing apparatus and the computer are connected via the USB I/F circuit 9 (S11). Next, when the user depresses the switch 10 to select the SW1 (S12), the image sensing apparatus performs an

image-sensing preparation operation (S13). Next, in preparation for image file transfer to the computer after image sensing, it is examined whether or not the computer is in the suspended status (S14). If the
5 computer is in the suspended status, a resume signal is transmitted via the USB I/F circuit 9 (S15). If the computer is not in the suspended status, the step of transmitting the resume signal is skipped. Next, it is examined whether or not the contact SW2 has been
10 selected by the user (S16). The checking as to whether or not the contact SW2 has been selected is performed for a predetermined period. If the SW2 has not been depressed after the predetermined period, there is a possibility that the user has stopped image sensing
15 operation. The process returns to step S12 to check whether or not the contact SW1 has been selected. If it is determined at step S16 that the contact SW2 has been selected, image sensing for formation of one digital image is performed, and the image is stored in the
20 memory (S17). Finally, the digital image stored in the memory is transmitted to the computer by using the USB I/F circuit 9 (S18). Thus, the sequence by the image sensing apparatus to form one digital image, store the image into the memory, and transfer the image stored in
25 the memory to the computer, is completed.

Then, the user's instruction for image-sensing

preparation is waited again at step S12.

That is, in the image sensing apparatus of the present embodiment, when an obtained image is transmitted to the computer at the same time of image
5 sensing by the image sensing apparatus, if the user has depressed the switch to select the contact SW1, the image sensing apparatus automatically transmits the resume signal to the computer if the computer is in the suspended status. Accordingly, it is unnecessary for the
10 user to operate the computer to release the suspended status. This user's labor can be removed, and the user can avoid missing a shutter chance.

(Second Embodiment)

15 In the first embodiment, the image sensing apparatus transmits the resume signal to the computer, triggered by the user's depression of the switch to select the contact SW1.

However, the user does not always depresses the
20 switch to select the contact SW2 to perform image sensing after the depression of the switch to select the contact SW1. In cases other than image sensing, the suspended status of the computer is released even though image file is not transferred to the computer.

25 In a second embodiment, the image sensing apparatus transmits a resume signal to the computer,

triggered by the user's depression of the switch to select the contact SW2.

The construction of the image sensing apparatus of the second embodiment is the same as that in Fig. 1.

5 Fig. 3 is a flowchart showing the operation of the present embodiment.

First, the image sensing apparatus and the computer are connected by the USB I/F circuit 9 (S21).

Next, when the user depresses the switch to select
10 the contact SW1 (S22), the image sensing apparatus performs image-sensing preparation operation (S23). Next, it is examined whether or not the user has depressed the switch to select the contact SW2 (S24). The checking as to whether or not the contact SW2 has been selected is
15 performed for a predetermined period. If the contact SW2 has not been selected after the predetermined period, there is a possibility that the user has stopped image sensing operation. The process returns to step S22, to check whether or not the contact SW1 has been selected.
20 If it is determined at step S24 that the contact SW2 has been selected, in preparation for image file transfer to the computer after image sensing, it is examined whether or not the computer is in the suspended status (step S25). If the computer is in the suspended status, a
25 resume signal is transmitted via the USB I/F circuit (step S26). If the computer is not in the suspended

status, the step of transmitting the resume signal is skipped. Then image sensing has performed to form one digital image, the image is stored into the memory (S27). Finally, the digital image stored in the memory is
5 transmitted to the computer by using the USB I/F circuit 9 (S28). Thus, the sequence by the image sensing apparatus to form one digital image, store the image into the memory, and at the same time, transfer the image file stored in the memory to the computer is
10 completed.

Then, the user's instruction for image sensing preparation is waited again at step S22.

That is, in the image sensing apparatus of the present embodiment, when an obtained image is
15 transmitted to the computer at the same time of image sensing by the image sensing apparatus, if the user has depressed the switch to select the contact SW2, the image sensing apparatus automatically transmits the resume signal to the computer if the computer is in the
20 suspended status. Accordingly, as in the case of the first embodiment, it is unnecessary for the user to operate the computer to release the suspended status. This user's labor can be removed, and the user can avoid missing a shutter chance.

25

(Third Embodiment)

In a third embodiment, the image sensing apparatus transmits a resume signal to the computer when the user has depressed the switch to select the contact SW2 then formed and stored digital image data.

- 5 The construction of the image sensing apparatus according to the third embodiment is the same as that in Fig. 1.

Fig. 4 is a flowchart showing the operation according to the third embodiment.

- 10 First, the image sensing apparatus and the computer are connected by the USB I/F circuit (S31). Next, if the user has depressed the switch to select the contact SW1 (S32), the image sensing apparatus performs image-sensing preparation operation (S33). Next, it is
- 15 examined whether or not the user has depressed the switch to select the contact SW2 (S34). The checking as to whether or not the contact SW2 has been selected is performed for a predetermined period. If the contact SW2 has not been selected after the predetermined period,
- 20 there is a possibility that the user has stopped image sensing operation. The process returns to step S32, to check whether or not the contact SW1 has been selected. If it is determined at step S34 that the contact SW2 has been selected, image sensing is performed to form one
- 25 digital image, and store the image into the memory (S35). Next, in preparation for image file transfer to the

computer, it is examined whether or not the computer is in the suspended status (S36). If the computer is in the suspended status, the resume signal is transmitted via the USB I/F circuit (S37). If the computer is not in the suspended status, the step of transmitting the resume signal is skipped. Finally, the digital image stored in the memory is transmitted to the computer by using the USB I/F circuit 9 (S38). Thus the sequence by the image sensing apparatus to form one digital image, store the image into the memory, and at the same time, to transfer the image file stored in the memory to the computer is completed.

Then, the user's instruction for image sensing preparation is waited again at step S32.

That is, in the image sensing apparatus of the present embodiment, when an obtained image is transmitted to the computer at the same time of image sensing by the image sensing apparatus, if the user has depressed the switch to select the contact SW2 and performed image sensing to form and store digital image data, the image sensing apparatus automatically transmits the resume signal to the computer if the computer is in the suspended status. Accordingly, as in the case of the first and second embodiments, it is unnecessary for the user to operate the computer to release the suspended status. This user's labor can be

removed, and the user can avoid missing a shutter chance.

Note that in addition to the above-described three
embodiments, if it is arranged such that the image
sensing apparatus automatically transmits a resume
5 signal to the computer if it is in the suspend status
when the user depresses an arbitrary switch of the image
sensing apparatus, as in the case of the above
embodiments, it is unnecessary for the user to operate
the computer to release the suspended status. This
10 user's labor can be removed, and the user can avoid
missing a shutter chance.

Further, in any of the above embodiments, as
information as to whether or not the USB-connected
computer is in the suspended status is displayed on the
15 display unit 11 in Fig. 1, the user obtains information
on the suspended status of the computer while operating
the image sensing apparatus.

Further, in the above embodiments, the resume
signal is transmitted in accordance with manipulation on
20 the shutter button by the user, however, the present
invention is not limited to this arrangement. For
example, in a case where automatic image sensing is
performed intermittently at predetermined intervals, it
may be arranged such that the resume signal is
25 automatically transmitted upon each image sensing
without the user's manual switch operation.

Further, the image sensing apparatus according to the present invention is not limited to a camera but may be any device to pick up an image and transmits an image signal.

5 Further, in the present invention, the image-sensing unit and the control device may be provided in one casing or may be provided in separate casings and connected with each other via a cable or wireless communication.

10

(Other Embodiment)

The present invention can be applied to a system constituted by a plurality of devices (e.g., a host computer, an interface, a reader and a printer) or to an
15 apparatus comprising a single device (e.g., a copy machine or a facsimile apparatus).

Further, the object of the present invention can be also achieved by providing a storage medium storing program code for performing the aforesaid processes to a
20 system or an apparatus, reading the program code with a computer (e.g., CPU, MPU) of the system or apparatus from the storage medium, then executing the program. In this case, the program code read from the storage medium realizes the functions according to the embodiments, and
25 the storage medium storing the program code constitutes the invention. Furthermore, besides aforesaid functions

according to the above embodiments are realized by
executing the program code which is read by a computer,
the present invention includes a case where an OS
(operating system) or the like working on the computer
5 performs a part or entire processes in accordance with
designations of the program code and realizes functions
according to the above embodiments.

Furthermore, the present invention also includes a
case where, after the program code read from the storage
10 medium is written in a function expansion card which is
inserted into the computer or in a memory provided in a
function expansion unit which is connected to the
computer, CPU or the like contained in the function
expansion card or unit performs a part or entire process
15 in accordance with designations of the program code and
realizes functions of the above embodiments.

In a case where the present invention is applied
to the aforesaid storage medium, the storage medium
stores program code corresponding to the flowcharts
20 (Figs. 2 to 4) described in the embodiments.

As described above, according to the present
invention, it is unnecessary for the user to operate the
computer to release the suspended status. This user's
labor can be removed, and the user can avoid missing a
25 shutter chance by operating the computer.

The present invention is not limited to the above

embodiments and various changes and modifications can be made within the spirit and scope of the present invention. Therefore, to appraise the public of the scope of the present invention, the following claims are
5 made.

WHAT IS CLAIMED IS:

1. An image sensing apparatus comprising: image sensing means for image-sensing an object and outputting an image signal; signal processing means for converting the image signal outputted from said image sensing means into digital image data; transmission/reception means for transmitting/receiving data with an information processing apparatus connected to said image sensing apparatus via a cable or wireless communication; and signal generation means for generating a trigger signal to perform image-sensing related operation,

wherein if said image sensing apparatus and said information processing apparatus are connected to each other and said information processing apparatus is in a suspended status, said image sensing apparatus transmits a resume signal via said transmission/reception means to said information processing apparatus, in accordance with said trigger signal.

2. The image sensing apparatus according to claim 1, further comprising recording means for recording said digital image data.

3. The image sensing apparatus according to claim 2, further comprising a switch having at least a first contact to start image-sensing preparation operation and

a second contact to start image sensing operation and digital image-data formation and recording, wherein when said first contact is turned on, said image sensing apparatus transmits said resume signal to said
5 information processing apparatus.

4. The image sensing apparatus according to claim 2, further comprising a switch having at least a first contact to start image-sensing preparation operation and
10 a second contact to start image sensing operation and digital image-data formation and recording, wherein when said second contact is turned on, said image sensing apparatus transmits said resume signal to said information processing apparatus.

15 5. The image sensing apparatus according to claim 2, further comprising a switch having at least a first contact to start image-sensing preparation operation and a second contact to start image sensing operation and
20 digital image-data formation and recording, wherein when said second contact has been turned on and said image sensing operation and said digital image-data formation and recording have been completed, said image sensing apparatus transmits said resume signal to said
25 information processing apparatus.

6. The image sensing apparatus according to claim 1, wherein said signal generation means is a particular switch provided in said image sensing apparatus.

5 7. The image sensing apparatus according to claim 1, further comprising display means for performing predetermined display, wherein if said image sensing apparatus and said information processing apparatus are connected to each other and said information processing
10 apparatus is in the suspended status, said display means displays information indicating that said information processing apparatus is suspended.

8. The image sensing apparatus according to claim 1,
15 wherein said transmission/reception means is based on the USB (Universal Serial Bus) specification.

9. A control method for an image sensing apparatus comprising: image_sensing means for image-sensing an
20 object and outputting an image signal; signal processing means for converting the image signal outputted from said image sensing means into digital image data; transmission/reception means for transmitting/receiving data with an information processing apparatus connected
25 to said image sensing apparatus via a cable or wireless communication; and signal generation means for

generating a trigger signal to perform image-sensing related operation,

said method comprising a step of, if said image sensing apparatus and said information processing apparatus are connected to each other and said information processing apparatus is in a suspended status, transmitting a resume signal from said image sensing apparatus via said transmission/reception means to said information processing apparatus, in accordance with said trigger signal.

10. A storage medium containing a control program for controlling an image sensing apparatus comprising: image sensing means for image-sensing an object and outputting an image signal; signal processing means for converting the image signal outputted from said image sensing means into digital image data; transmission/reception means for transmitting/receiving data with an information processing apparatus connected to said image sensing apparatus via a cable or wireless communication; and signal generation means for generating a trigger signal to perform image-sensing related operation,

said control program having code for, if said image sensing apparatus and said information processing apparatus are connected to each other and said information processing apparatus is in a suspended

status, transmitting a resume signal from said image sensing apparatus via said transmission/reception means to said information processing apparatus, in accordance with said trigger signal.

5

11. An image-sensing method in an image sensing apparatus comprising: image sensing means for image-sensing an object and outputting an image signal; signal processing means for converting the image signal
10 outputted from said image sensing means into digital image data; transmission/reception means for transmitting/receiving data with an information processing apparatus connected via a cable or wireless communication; and signal generation means for
15 generating a trigger signal to perform image-sensing related operation,

said method comprising a step of, if said image sensing apparatus and said information processing apparatus are connected to each other and said
20 information processing apparatus is in a suspended status, transmitting a resume signal from said image sensing apparatus via said transmission/reception means to said information processing apparatus, in accordance with said trigger signal.

25

12. A control apparatus for controlling an image

sensing apparatus comprising: image sensing means for
image-sensing an object and outputting an image signal;
signal processing means for converting the image signal
outputted from said image sensing means into digital
5 image data; transmission/reception means for
transmitting/receiving data with an information
processing apparatus connected via a cable or wireless
communication; and signal generation means for
generating a trigger signal to perform image-sensing
10 related operation,

wherein if said image sensing apparatus and said
information processing apparatus are connected to each
other and said information processing apparatus is in a
suspended status, said control apparatus controls said
15 image sensing apparatus to transmit a resume signal via
said transmission/reception means to said information
processing apparatus, in accordance with said trigger
signal.

ABSTRACT OF THE DISCLOSURE

An image sensing apparatus improves operability in transmission of image data to a computer or the like. An image sensing apparatus 12 has an image sensing device 2 which image-senses an object and outputs an image signal, signal processing circuits 3 and 4 which convert the image signal outputted from the image sensing device 2 into digital image data, a USB I/F circuit 9 which transmits/receives data with a computer 13 as an information processing apparatus connected to the image sensing apparatus via a cable or wireless communication, and a switch 10 as a signal generation unit which generates a trigger signal to perform image-sensing related operation. If the image sensing apparatus 12 and the computer 13 are connected to each other and the computer 13 is in a suspended status, the image sensing apparatus 12 transmits a resume signal via the USB I/F circuit 9 to the computer 13.

FIG. 1

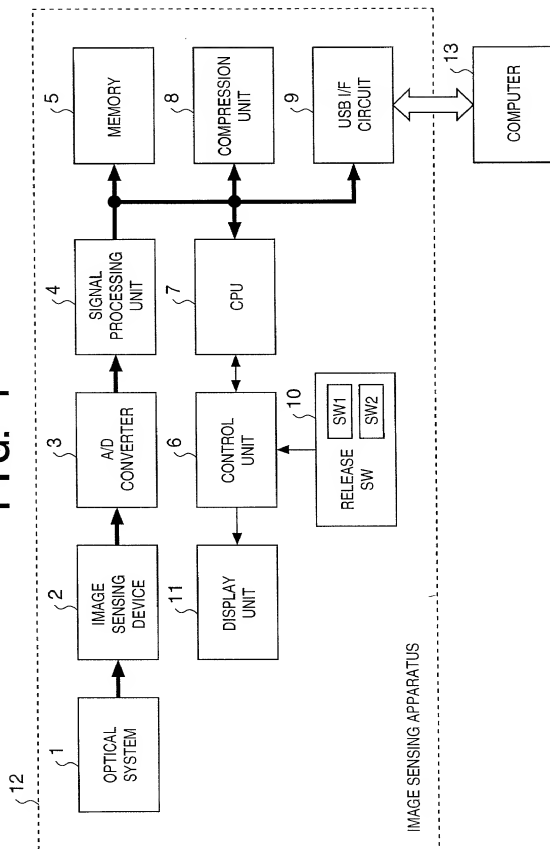


FIG. 2

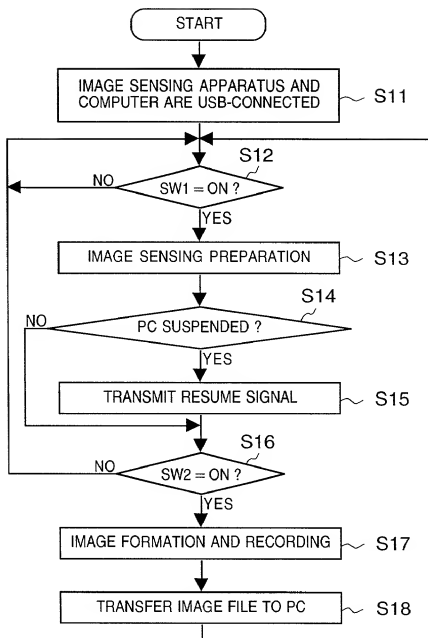


FIG. 3

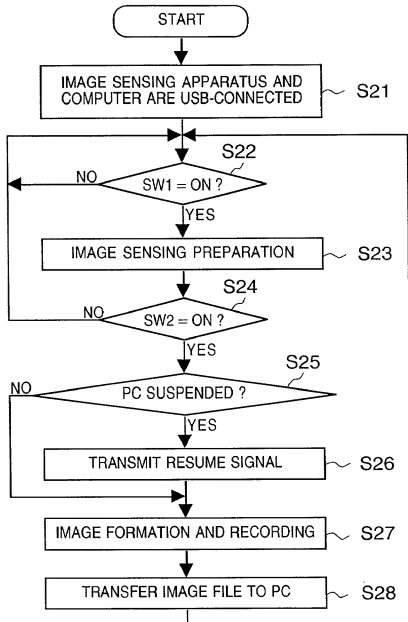
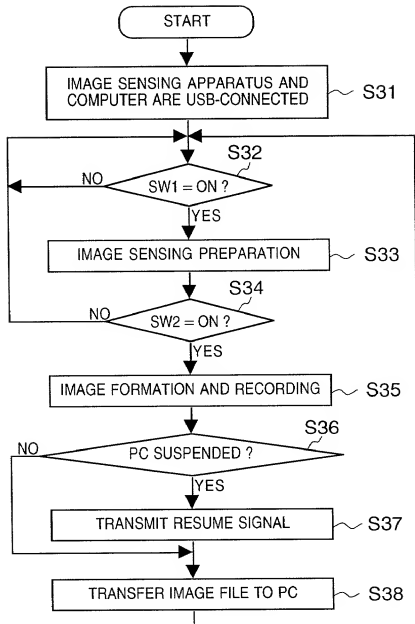


FIG. 4



Docket No. _____

COMBINED DECLARATION AND POWER OF ATTORNEY FOR
ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL,
DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

IMAGE-SENSING METHOD AND APPARATUS, CONTROL METHOD AND APPARATUS THEREFOR, AND STORAGE MEDIUM

the specification of which

a. ☒ is attached hereto

b. ☐ was filed on _____ as application Serial No. _____ and
was amended on _____ (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

c. ☐ was described and claimed in International Application No. _____ filed on
_____ and as amended on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby specify the following as the correspondence address to which all communications about this application are to be directed:

SEND CORRESPONDENCE TO: MORGAN & FINNEGAN, L.L.P.
345 Park Avenue
New York, N.Y. 10154

DIRECT TELEPHONE CALLS TO: MICHAEL M. MURRAY
(212) 758-4800

☒ I hereby claim foreign priority benefits under Title 35, United States Code § 119 (a)-(d) or under § 365(b) of any foreign application(s) for patent or inventor's certificate or under § 365(a) of any PCT international application(s) designating at least one country other than the U.S. listed below and also have identified below such foreign application(s) for patent or inventor's certificate or such PCT international application(s) filed by me on the same subject matter having a filing date within twelve (12) months before that of the application on which priority is claimed:

☒ The attached 35 U.S.C. § 119 claim for priority for the application(s) listed below forms a part of this declaration.

Country/PCT	Application Number	Date of filing (day, month, yr)	Date of issue (day, month, yr)	Priority Claimed
JAPAN	11-122980	28/04/1999		[X]YES []NO

[]YES []NO

[]YES []NO

[] I hereby claim the benefit under 35 U.S.C. § 119(e) of any U.S. provisional application(s) listed below.

Provisional Application No.

Date of filing (day, month, yr)

ADDITIONAL STATEMENTS FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART OR PCT INTERNATIONAL APPLICATION(S) DESIGNATING THE U.S.)

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s) or under § 365(c) of any PCT international application(s) designating the U.S. listed below.

US/PCT Application Serial No.	Filing Date,	Status (patented, pending, abandoned)/ U.S. application no. assigned (For PCT)

US/PCT Application Serial No.	Filing Date,	Status (patented, pending, abandoned)/ U.S. application no. assigned (For PCT)

[] In this continuation-in-part application, insofar as the subject matter of any of the claims of this application is not disclosed in the above listed prior United States or PCT international application(s) in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys and/or agents with full power of substitution and revocation, to prosecute this application, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith: John A. Diaz (Reg. No. 19,550), John C. Vassil (Reg. No. 19,098), Alfred P. Ewert (Reg. No. 19,887), David H. Pfeffer, P.C. (Reg. No. 19,825), Harry C. Marcus (Reg. No. 22,390), Robert E. Paulson (Reg. No. 21,046), Stephen R. Smith (Reg. No. 22,615), Kurt E. Richter (Reg. No. 24,052), J. Robert Dailey (Reg. No. 27,434), Eugene Moroz (Reg. No. 25,237), John F. Sweeney (Reg. No. 27,471), Arnold I. Rady (Reg. No. 26,601), Christopher A. Hughes (Reg. No. 26,914), William S. Feiler (Reg. No. 26,728), Joseph A. Calvaruso (Reg. No. 28,287), James W. Gould (Reg. No. 28,859), Richard C. Komson (Reg. No. 27,913), Israel Blum (Reg. No. 26,710), Bartholomew Verdrame (Reg. No. 28,483), Maria C. H. Lin (Reg. No. 29,323), Joseph A. DeGirolamo (Reg. No. 28,595), Michael A.

Nicodema (Ref. No. 33,199), Michael P. Dougherty (Ref. No. 32,730), Seth J. Altas (Reg. No. 32,454), Andrew M. Riddles (Reg. No. 31,657), Bruce D. DeRenzi (Reg. No. 33,676), Michael M. Murray (Reg. No. 32,537) and Mark J. Abate (Reg. No. 32,527); Alfred L. Haffner, Jr. (Reg. No. 18,919), Harold Haidt (Reg. No. 17,509), John T. Gallagher (Reg. No. 35,516), Steven F. Meyer (Reg. No. 35,613); Kenneth H. Sonnenfeld (Reg. No. 33,285), Edward A. Pennington (Reg. No. 32,588), Michael S. Marcus (Reg. No. 31,727) and John E. Hoel (Reg. No. 26,279) of Morgan & Finnegan, L.L.P., whose address is: 345 Park Avenue, New York, New York 10154.

☐ I hereby authorize the U.S. attorneys and/or agents named hereinabove to accept and follow instructions from _____ as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and/or agents and me. In the event of a change in the person(s) from whom instructions may be taken I will so notify the U.S. attorneys and/or agents named hereinabove.

Full name of sole or first inventor Yuji KOIDE

Inventor's signature* Yuji Koide date March 27, 2000

Residence 14-42-203, Hiyoshi 5-chome, Kohoku-ku, Yokohama-shi, Kanagawa-ken, Japan

Citizenship Japan

Post Office Address c/o CANON KABUSHIKI KAISHA 30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, Japan

Full name of second inventor _____

Inventor's signature* _____ date _____

Residence _____

Citizenship _____

Post Office Address _____

☐ ATTACHED IS ADDED PAGE TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR SIGNATURE BY THIRD AND SUBSEQUENT INVENTORS FORM.

* Before signing this declaration, each person signing must:

1. Review the declaration and verify the correctness of all information therein; and
2. Review the specification and the claims, including any amendments made to the claims.

After the declaration is signed, the specification and claims are not to be altered.

To the inventor(s):

The following are cited in or pertinent to the declaration attached to the accompanying application:

Title 37, Code of Federal Regulation, § 1.56

Duty to disclose information material to patentability.

(a) A patent by its very nature is affect with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application,
- and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

Title 35, U.S. Code § 101

Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Title 35 U.S. Code § 102

Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent,

(b) the invention was patented or described in a printed publication in this or foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States, or

(c) he has abandoned the invention, or

(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or

(f) he did not himself invent the subject matter sought to be patented, or

(g) before the applicant's invention thereof the invention was made in this country by another had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other ...

Title 35, U.S. Code § 103

Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Title 35, U.S. Code § 112 (in part)

Specification

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms also enable any person skilled in the art to which it pertains, or with which it is mostly nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Title 35, U.S. Code § 119

Benefit of earlier filing date in foreign country; right of priority

An application for patent for an invention filed in this country by any person who has, or whose legal representatives or assigns have, previously regularly filed an application for a patent for the same invention in a foreign country which affords similar privileges in the case of applications filed in the United States or to citizens of the United States, shall have the same effect as the same application would have if filed in this country on the date on which the application for patent for the same invention was first filed in such foreign country, if the application in this country is filed within twelve months from the earliest date on which such

foreign application was filed; but no patent shall be granted on any application for patent for an invention which had been patented or described in a printed publication in any country more than one year before the date of the actual filing of the application in this country, or which had been in public use or on sale in this country more than one year prior to such filing.

Title 35, U.S. Code § 120

Benefit or earlier filing date in the United States

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.

Please read carefully before signing the Declaration attached to the accompanying Application.

If you have any questions, please contact Morgan & Finnegan, L.L.P.

FORM:COMB-DEC.NY

Rev. 5/21/98